KABELKOM®

OPERATION MANUAL

CABLE TV LEAKAGE METERS

AM² SIGNAL TAGGER

All rights reserved. This document contains information proprietary to **KABELKOM**. No part of this publication may be used, reproduced, stored in a retrieval system, or copied in any manner without the prior written permission of **KABELKOM**.
The information in this user's manual is subject to change without prior notice.
The detailed information about software and copyright is present on the CD (license).
The software described in this manual is delivered under a license agreement. The software may be used or copied only in accordance with the terms of the agreement.

Microsoft and Windows are registered trademarks of Microsoft Corporation.
Windows 95/98/ME/2000/NT/XP/Vista and ActiveSync are trademarks of Microsoft Corporation.
Google Earth is a registered trademark of Google, Inc.
Product names mentioned herein may be trademarks and/or registered trademarks of their respective owners/companies.

NOTICE

THE MANUFACTURER OR RESELLER SHALL NOT BE LIABLE FOR ERRORS OR OMISSIONS CONTAINED IN THIS MANUAL AND SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES, WHICH MAY RESULT FROM THE PERFORMANCE OR USE OF THIS MANUAL, EQUIPMENT OR SOFTWARE.

© **KABELKOM** 2013 All rights reserved.

KABELKOM
ul. Bukowa 30
43-300 Bielsko-Biała
POLAND
E-mail: kabelkom@kabelkom.pl
Internet: http://www.kabelkom.pl

Jan 2013
Ver. 1.0

WARRANTY

KABELKOM warrants that all products manufactured by KABELKOM conform to KABELKOM's published specifications as well as the essential requirements of the European Union stated in the EU Directives and are free from defects in materials and workmanship for a period of one (1) year from the date of delivery to the original Buyer, when used under normal operating conditions and within the service conditions for which they were designed. This warranty is not transferrable and does not apply to used or demonstration products.

The obligation of KABELKOM arising from a Warranty claim shall be limited to repairing, or at its option, replacing without charge, any assembly or component (except batteries) which in KABELKOM's sole opinion proves to be defective within the scope of the Warranty. In the event KABELKOM is not able to modify, repair or replace nonconforming defective parts or components to a condition as warranted within a reasonable time after receipt thereof, Buyers shall receive credit in the amount of the original invoiced price of the product.

KABELKOM must be notified in writing of the defect or nonconformity within the Warranty period and the affected Product returned to KABELKOM's factory, designated Service Provider, or Authorized Service Center within thirty (30) days after discovery of such defect or nonconformity. Buyer shall prepay shipping charges and insurance for Products returned to KABELKOM or its designated Service Provider for warranty service. KABELKOM or its designated Service Provider shall pay costs for return of Products to Buyer.

KABELKOM shall have no responsibility for any defect or damage caused by improper storage, improper installation, unauthorized modification, misuse, neglect, inadequate maintenance, accident or for any Product which has been repaired or altered by anyone other than KABELKOM or its authorized representative or not in accordance with instructions furnished by KABELKOM.

The Warranty described above is Buyer's sole and exclusive remedy and no other warranty, whether written or oral, expressed or implied by statue or course of dealing shall apply. KABELKOM specifically disclaims the implied warranties of merchantability and fitness for a particular purpose. No statement, representation, agreement, or understanding, oral or written, made by an agent, distributor or employee of KABELKOM, which is not contained in the foregoing Warranty will be binding upon KABELKOM, unless made in writing and executed by an authorized representative of KABELKOM. Under no circumstances shall KABELKOM be liable for any direct, indirect, special, incidental, or consequential damages, expenses, or losses, including loss of profits, based on contract, tort, or any other legal theory.

Dear AM^2 User,

Thank you very much for purchasing the **AM^2** signal tagger! It has been designed for your satisfaction. We do hope that the meter will effectively help you to find leakage and ingress sources in your CATV network. Although it is a very modern and sophisticated tool, the operation with the tagger is very easy. However, we suggest you to read this manual carefully before you start to work with it. If you have any remarks concerning the meter, its functions, parameters or possible improvement, please contact us.

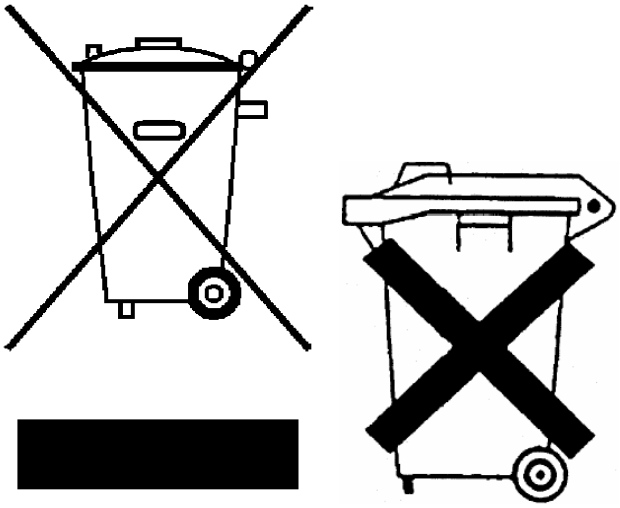
Enjoy the work with your **AM^2** signal tagger!

Sincerely,

KABELKOM team

CUSTOMER INFORMATION REGARDING PRODUCT DISPOSAL

Our AM2 signal tagger has the label shown below (in accordance with EN 50419).



This equipment contains harmful substances that must not be disposed of as normal household waste. Once the lifetime of a product has ended, this product must not be disposed of in the standard domestic refuse. It may be disposed of at the KABELKOM Service Center or at a suitable depot. It is an implementation of the following EC directives:

- 2002/96/EC on waste electrical and electronic equipment (WEEE)
- 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

CONTENTS

1. INTRODUCTION.....6

2. PREPARATION FOR OPERATION.....7

3. INSTALLATION OF THE AM^2 SIGNAL TAGGER.....8

4. SETTING UP THE AM^2.....9

5. USER SUPPORT.....10

APPENDIX 1 Technical parameters.....11

APPENDIX 2 Declaration of Conformity.....13

1. INTRODUCTION

The **AM² signal tagger** has been designed for cooperation with KABELKOM's **AMS2010** series meters. The **AMS2010** series meters allow leakage measurement in analog, analog/digital and digital CATV networks. The detection efficiency and reduction of false alarms in noisy environments have been achieved by tagging the measured signal. The **AM² tagger** uses a unique signal tagging method (patent pending) suitable for analog as well as digital cable TV networks.

The **AMS2010** meters together with the **AM² signal tagger** make the accurate leakage measurements needed for verifying compliance with government regulations (e.g., EN 50083-8 in the European Union countries or FCC Part 76 of the Code of Federal Regulations Title 47 in the U.S.A.).

2. PREPARATION FOR OPERATION

Before operating the AM^2 tagger, make sure you carefully inspect the product and read the operation manual.

WARNING

Only trained service personnel who are aware of the hazards involved (for example, fire or electric shock) should perform repairs on the AM^2 signal tagger!

Tuning the AM^2 tagger and replacing components influencing the accuracy of measurements without authorized service personnel is strictly prohibited and may cause inaccurate or improper operation of the tagger.

The AM^2 package includes:

- the AM^2 signal tagger
- the AC power (mains) cable.

Upon receipt of the package, check the availability of the items contained in it against the list provided. Perform an external examination to make sure your AM^2 is free from any visible physical or mechanical damage. If the tagger has been stored in an extreme environment, which exceeds the rated operating conditions, place the unit inside a temperature controlled facility with normal operating conditions for 2 hours prior to operation.

3. INSTALLATION OF THE AM^2 SIGNAL TAGGER

Insert the AM^2 tagger into the rack close to the combining network of your CATV headend. Connect the power cord to the mains socket and to the power connector at the rear side of the tagger. Switch the tagger on. The front panel should display some numbers (see Fig. 1). Next, connect the tagger output with the combining network by means of an F-connector coaxial cable. The tagger is ready for setting up.

Fig. 1. The LCD display of the AM^2 signal tagger

4. SETTING UP THE AM² SIGNAL TAGGER

Fig. 2. The AM² front panel with the keyboard

The tagger parameters can be set up using the keyboard with LEFT, RIGHT, UP, DOWN, ESC and ENTER buttons.

1. Choose the parameter you want to modify by means of the LEFT or RIGHT buttons on the front panel (Fig. 2). The parameter for modification is marked by the asterisk "*" sign on the left (see Fig. 1).

2. You can set up two independent tagging frequencies TAG 1F and TAG 2F. After selecting the frequency (displayed in kHz), press ENTER and choose the digit you want to modify using the LEFT or RIGHT buttons and change its value using the UP or DOWN buttons. After finishing, press ESC. If you want to enable or disable the frequency, choose TAG 1 or TAG 2 with the LEFT and RIGHT buttons and press ENTER. If the frequency is enabled, the letter "A" appears on the left.

3. Each frequency (TAG 1F or 2F) can be modulated in amplitude. You can set up the modulation frequency value choosing the proper frequency (displayed in Hz) with the LEFT and RIGHT buttons, pressing ENTER, choosing the proper digit and setting its value with the UP and DOWN buttons. When you have finished, press ESC.

4. You can change the mode of operation for each frequency. Choose the TM/TF (depends on the current settings) field with the LEFT and RIGHT buttons and press ENTER. The mode of operation should change.

5. You can also modify the tagger output level. If you have analog and digital TV channels in your network, set up the output level on the analog TV video carrier level value. If you have digital channels only, set up the same value of the signal output. To simplify the operation, connect any spectrum analyzer or power level meter to the output of the network combiner. Choose the level field (L shown in % - see Fig. 1) with the LEFT and RIGHT buttons and press ENTER. Next, try to adjust the output level of the tagger with the UP and DOWN buttons. Press ESC when the correct tagger output level value has been obtained.

5. USER SUPPORT

If you have any problems with your signal tagger, any questions or suggestions concerning our product, please contact us:

kabelkom@kabelkom.pl

phone: +48 33 8185555

APPENDIX 1

TECHNICAL PARAMETERS

GENERAL

- size: 60 mm x 80 mm x 140 mm

- weight: 0.5-0.6 kg (depending on the version)

- storage temperature range: -40 ÷ +70 °C

- operating temperature range: 0 ÷ +50 °C

- relative humidity: noncondensing <90% at 25 °C

POWERING

- 230 V AC mains

ELECTRICAL

- output: F-connector female 75 Ω

- tuning frequency range: 1 – 200 MHz

- tuning step: 1 kHz

APPENDIX 2

DECLARATION OF CONFORMITY

KABELKOM

EC Certificate of Conformity

CE

Certificate No. 2012-1

This is to certify that:

Equipment type	Designation
AM^2	Leakage signal tagger for cable TV networks

complies with the provisions of the Directive of the Council of the European Union on the approximation of the laws of the Member States relating to electromagnetic compatibility (2004/108/EC). Conformity is proven by compliance with:

EN55022:2006 *Limits and methods of measurement of radio disturbance characteristics of information technology equipment.*

Jarosław Szóstka, Ph.D.
Head of KABELKOM's
Testing Laboratory

KABELKOM Sp. z o.o.
ul. Bukowa 30
43-300 Bielsko-Biała, Poland

Bielsko-Biała, 2012-10-31